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Rubber compounding ingredients — Carbon black — Determination of sulfur content

Ingrédients de mélange du caoutchouc — Noir de carbone — Dosage du soufre total

Reference number
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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

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This document was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 3, *Raw materials (including latex) for use in the rubber industry*.

This third edition cancels and replaces ISO 1138:2007 and ISO 1138:2007/Amd 1:2012, which have been technically revised.

The main changes are as follows:

— withdrawal of the method using an oxygen bomb calorimeter (previously called Method A) due to the use of hazardous chemicals, and withdrawal of Amendment 1:2012 related to that method;

— addition of CAS numbers to the chemical reagents used in the current Method A.

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Rubber compounding ingredients — Carbon black — Determination of sulfur content

1 Scope

This document specifies two methods for the determination of the total sulfur in all types of carbon black for use in the rubber industry:

— Method A, using a combustion furnace;

— Method B, using an automatic analyser.

With respect to safety aspects and test precision, it is preferable to use automatic systems. Method B is therefore the preferred method. Classical chemical analysis (Method A) is acceptable if automatic equipment is not available.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 15671, *Rubber and rubber additives — Determination of total sulfur content using an automatic analyser*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Method A: Combustion furnace

4.1 Principle

A weighed test portion of dried carbon black is heated at a temperature of 1 425 °C in a combustion furnace in a stream of oxygen. The sulfur compounds evolved from the test portion are collected in a titrating flask containing hydrochloric acid solution. These compounds are titrated with standard volumetric potassium iodate-potassium iodide solution. The percentage of sulfur is calculated.

4.2 Reagents

During the analysis, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

4.2.1 Hydrochloric acid.

Mix 2 volumes of concentrated hydrochloric acid (ρ_{20} 1,19 g/ml; CAS 7647-01-0) with 13 volumes of water; CAS 7732-18-5.

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